VIA FIRST CLASS MAIL
Lhereby certify that this corresponde being deposited with the
United States Postal Service as First Mail in an envelope
addressed to Commissioner of Patents and Trademarks,
Washington, D.C. 20231 on May 2, 2001.
annette Crosson
Annette Crossan

LUD-5531.1 (09885374)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Van der Bruggen et al.

Serial No.

09/782,745

Filed

February 13, 2001

For

ISOLATED POLYPEPTIDES WHICH BIND TO HLA-A29 MOLECULES,

NUCLEIC ACID AND MOLECULES ENCODING THESE, AND USES

THEREOF

Group Art Unit:

to be assigned

Examiner

to be assigned

May 2, 2001

Hon. Commissioner of Patents and Trademarks Washington, D.C. 20231

> REQUEST FOR SEQUENCE TRANSFER (37 CFR § 1.821(e))

Sir:

The above referenced application is a divisional of Serial No. 09/012,818, filed on January 23, 1998. Please transfer the computer readable form of sequence information submitted in the patent application on July 23, 1999 to the above referenced application. Please CANCEL the current paper copy of sequence information presented in this application, and replace it with the attached. The undersigned hereby declares that, to the best of his knowledge, the information presented in computer readable form is identical to information presented in the attached paper copy of sequence information, and both are identical to information set forth in the above referenced application as filed. No new matter is believed presented.

Respectfully submitted,

FULBRIGHT & JAWORSKI, L.L.P.

Norman D. Hanson

Reg. No. 30,946

666 Fifth Avenue New York, New York 10102 (212) 318-3000

GENERAL INFORMATION:

- (i) APPLICANTS: Van der Bruggen, Pierre; Van den Eynde, Benoit;
 DeBacker, Olivier; Boon-Falleur, Thierry
- (ii) TITLE OF INVENTION: Isolated, Polypeptides Which Bind to HLA-A29 Molecules, Nucleic Acid, The Molecules Encoding These, and Uses Thereof
- (iii) NUMBER OF SEQUENCES: 31
- (iv) CORRESPONDENCE ADDRESS:
 - (A) ADDRESSEE: Fulbright & Jaworski L.L.P.
 - (B) STREET: 666 Fifth Avenue
 - (C) CITY: New York City
 - (D) STATE: New York
 - (E) COUNTRY: USA
 - (F) ZIP: 10103-3198
- (v) COMPUTER READABLE FORM:
 - (A) MEDIUM TYPE: Diskette, 3.5 inch, 1.44 kb storage
 - (B) COMPUTER: IBM PS/2
 - (C) OPERATING SYSTEM: PC
 - (D) SOFTWARE: Wordperfect
- (vi) CURRENT APPLICATION DATA:
 - (A) APPLICATION NUMBER:
 - (B) FILING DATE:
 - (C) CLASSIFICATION: 435
- (vii) PRIOR APPLICATION DATA:
 - (A) APPLICATION NUMBER: 09/012,818
 - (B) FILING DATE: 23-January-1998
 - (C) CLASSIFICATION: 435
- (vii) PRIOR APPLICATION DATA:
 - (A) APPLICATION NUMBER: 08/531,662
 - (B) FILING DATE: 21-September-1995
- (vii) PRIOR APPLICATION DATA:
 - (A) APPLICATION NUMBER: 08/370,648
 - (B) FILING DATE: 10-January-1995
- (vii) PRIOR APPLICATION DATA:
 - (A) APPLICATION NUMBER: 08/250,162
 - (B) FILING DATE: 27-May-1994

(2)

		•	A) APPLICATIO B) FILING DAT				/096,039		
	(viii)	(<i>I</i>	TTORNEY/AGA) NAME: Har B) REGISTRAT C) REFERENC	isoi IOl	n, Norman D. N NUMBER:	· : 3	30,946	531 PCT	
	(ix)	(/	ELECOMMUN A) TELEPHON B) TELEFAX:	E:	(212) 318-31				
(2)	INFOI (i)		MATION FOR SEQUENCE CHA) LENGTH: 6 B) TYPE: nucle C) STRANDED D) TOPOLOGY	AR 46 ic a NE ': li	ACTERISTIC base pairs acid ESS: single inear				
CTGC	` '		GACTCTTTT					TGTGAAATAT	50
•								CGCTACGTAG	100
AGCC	CTCCTG.	A	AATGATTGGG	CC	CTATGCGGC	С	CGAGCAGTT	CAGTGATGAA	150
GTGC	GAACCA	G	CAACACCTGA	A	BAAGGGGAA	С	CAGCAACTC	AACGTCAGGA	200
TCCT	rgcagc	Т	GCTCAGGAGG	G	4GAGGATGA	G	GGAGCATCT	GCAGGTCAAG	250
GGC	CGAAGC	C	TGAAGCTGAT	A	GCCAGGAAC	A	.GGGTCACCC	ACAGACTGGG	300
TGT	GAGTGT	G	AAGATGGTCC	T	BATGGGCAG	G	AGATGGACC	CGCCAAATCC	350
AGA	GGAGGT	'G	AAAACGCCTG	A	AGAAGAGAT	G	SAGGTCTCAC	TATGTTGCCC	400
AGA	CTGGGA	Т	TCTCTGGCTT	T'	FAATGAACA	. A	TTGCTTCTT	AAATCTTTCC	450
CCA	CGGAAA	'C	CTTGAGTGAC	T	GAAATATCA	. A	ATGGCGAGA	GACCGTTTAG	500
TTC	CTATCA	T	CTGTGGCATG	T (GAAGGGCAA	. Т	CACAGTGTT	AAAAGAAGAC	550
ATG	CTGAAA	T	GTTGCAGGCT	G	CTCCTATGT	, Л	TGGAAAATTC	TTCATTGAAG	600

PRIOR APPLICATION DATA:

(vii)

646

TTCTCCCAAT AAAGCTTTAC AGCCTTCTGC AAAGAAAAAA AAAAAA

(2)	INFOI (i)	RMATION FOR SEQ ID NO: 2: SEQUENCE CHARACTERISTICS:	
		(A) LENGTH: 18 base pairs	
		(B) TYPE: nucleic acid (C) STRANDEDNESS: single	
		(D) TOPOLOGY: linear	
	(xi)	SEQUENCE DESCRIPTION: SEQ II	D NO: 2:
AGA	CGCTA	CG TAGAGCCT	18
(2)	n mo	DALLETON FOR CEO ID MO. 2.	
(2)		RMATION FOR SEQ ID NO: 3: SEQUENCE CHARACTERISTICS:	
	(i)	(A) LENGTH: 18 base pairs	
		(B) TYPE: nucleic acid	
		(C) STRANDEDNESS: single	
•		(D) TOPOLOGY: linear	
	(xi)		D NO: 3:
	, ,	-	
CCA'	TCAGG	GAC CATCTTCA	18
(2)	nmo	DNA MION FOR SEO ID NO. 4.	
(2)		RMATION FOR SEQ ID NO: 4: SEQUENCE CHARACTERISTICS:	
	(i)	(A) LENGTH: 8 amino acids	
		(B) TYPE: amino acid	
		(D) TOPOLOGY: linear	
	(xi)		ID NO: 4:
	(AI)	512(621,622,223,612,123,613,613,613,613,613,613,613,613,613,61	
Tyr A	Arg Pro	Arg Pro Arg Arg Tyr 5	
(2)	INFO	DRMATION FOR SEQ ID NO: 5:	
	(i)	SEQUENCE CHARACTERISTICS	:
		(A) LENGTH: 9 amino acids	
		(B) TYPE: amino acid	
		(D) TOPOLOGY: linear	ID NO: 5:
	(xi)	SEQUENCE DESCRIPTION: SEQ	ייין אַטאַ עד
Thr	Tvr Are	g Pro Arg Pro Arg Arg Tyr	
1	- 3 - 1 - 1 - 2	5	
-			

- (2) INFORMATION FOR SEQ ID NO: 6: (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid
 - (D) TOPOLOGY: linear
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:

Tyr Arg Pro Arg Pro Arg Arg Tyr Val
1 5

- (2) INFORMATION FOR SEQ ID NO: 7:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amino acid
 - (D) TOPOLOGY: linear
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:

Thr Tyr Arg Pro Arg Pro Arg Arg Tyr Val 1 5 10

- (2) INFORMATION FOR SEQ ID NO: 8:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid
 - (D) TOPOLOGY: linear
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:

Arg Pro Arg Pro Arg Arg Tyr Val Glu
1 5

- (2) INFORMATION FOR SEQ ID NO: 9:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 18 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:

GACCAAGACG CTACGTAG

18

(2)	INFOR (i)	RMATION FOR SEQ I SEQUENCE CHARA (A) LENGTH: 18 bas (B) TYPE: nucleic aci (C) STRANDEDNES (D) TOPOLOGY: line	CTERISTICS: e pairs id S: single	
	(xi)	SEQUENCE DESCR	IPTION: SEQ I	D NO: 10:
CCAT	CAGG	AC CATCTTCA		18
(2)	INFOI (i) (xi)	RMATION FOR SEQ 3 SEQUENCE CHARA (A) LENGTH: 17 bas (B) TYPE: nucleic ac (C) STRANDEDNES (D) TOPOLOGY: lin- SEQUENCE DESCR	CTERISTICS: e pairs id S: single ear	ID NO: 11:
GCGC	. ,	AG CAGTTCA		17
(2)	(i)	RMATION FOR SEQ SEQUENCE CHARA (A) LENGTH: 15 am (B) TYPE: amino ac (D) TOPOLOGY: lin SEQUENCE DESCR	ACTERISTICS: ino acids id ear	
14 · C	(xi)	-		
	-	Arg Gly Arg Ser Thr T 5		
(2)	INFO: (i)	RMATION FOR SEQ SEQUENCE CHARA (A) LENGTH: 16 am (B) TYPE: amino ac (D) TOPOLOGY: lin SEQUENCE DESCR	ACTERISTICS: nino acids id lear	
Thr T	'yr Arg	Pro Arg Pro Arg Arg 5	Tyr Val Glu Pr 10	o Pro Glu Met Ile 15

(2) INFORMATION FOR SEQ ID NO: 14:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 538 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:

ACGCCAGGGA	GCTGTGAGGC	AGTGCTGTGT	GGTTCCTGCC	GTCCGGACTC	50
TTTTTCCTCT	ACTGAGATTC	ATCTGTGTGA	AATATGAGTT	GGCGAGGAAG	100
ATCGACCTAT	CGGCCTAGAC	CAAGACGCTA	CGTAGAGCCT	CCTGAAATGA	150
TTGGGCCTAT	GCGGCCCGAG	CAGTTCAGTG	ATGAAGTGGA	ACCAGCAACA	200
CCTGAAGAAG	GGGAACCAGC	AACTCAACGT	CAGGATCCTG	CAGCTGCTCA	250
GGAGGGAGAG	GATGAGGGAG	CATCTGCAGG	TCAAGGGCCG	AAGCCTGAAG	300
CTCATAGCCA	GGAACAGGGT	CACCCACAGA	CTGGGTGTGA	GTGTGAAGAT	350
GGTCCTGATG	GGCAGGAGAT	GGACCCGCCA	AATCCAGAGG	AGGTGAAAAC	400
GCCTGAAGAA	GGTGAAAAGC	AATCACAGTG	TTAAAAGAAG	ACACGTTGAA	450
ATGATGCAGG	CTGCTCCTAT	GTTGGAAATT	TGTTCATTAA	AATTCTCCCA	500
ATAAAGCTTT	ACAGCCTTCT	GCAAAGAAAA	AAAAAAA		538

(2) INFORMATION FOR SEQ ID NO: 15:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 560 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 15:

CTCATATTTC	ACACAGATGA	GTTGGCGAGG	AAGATCGACC	TATTATTGGT	50
CTAGGCCAAT	AATAGGTCGA	TCTTCCTCGC	CAACTCATAT	TTCACACAGA	100
TGAATCTCAG	TAGAGGAAAA	TCGACCTATT	ATTGGCCTAG	ACCAAGGCGC	150
TATGTACAGC	CTCCTGAAGT	GATTGGGCCT	ATGCGGCCCG	AGCAGTTCAG	200
TGATGAAGTG	GAACCAGCAA	CACCTGAAGA	AGGGGAACCA	GCAACTCAAC	250

6

GTCAGGATCC	TGCAGCTGCT	CAGGAGGGAG	AGGATGAGGG	AGCATCTGCA	300
GGTCAAGGGC	CGAAGCCTGA	AGCTGATAGC	CAGGAACAGG	GTCACCCACA	350
GACTGGGTGT	GAGTGTGAAG	ATGGTCCTGA	TGGGCAGGAG	ATGGACCCGC	400
CAAATCCAGA	GGAGGTGAAA	ACGCCTGAAG	AAGGTGAAAA	GCAATCACAG	450
TGTTAAAAGA	AGGCACGTTG	AAATGATGCA	GGCTGCTCCT	ATGTTGGAAA	500
TTTGTTCATT	AAAATTCTCC	CAATAAAGCT	TTACAGCCTT	CTGCAAAGAA	550
АААААААА					560

- (2) INFORMATION FOR SEQ ID NO: 16:
 - SEQUENCE CHARACTERISTICS: (i)
 - (A) LENGTH: 540 base pairs

 - (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
 - SEQUENCE DESCRIPTION: SEQ ID NO: 16: (xi)

CGCCAGGGAG	CTGTGAGGCA	GTGCTGTGTG	GTTCCTGCCG	TCCGGACTCT	50
TTTTCCTCTA	CTGAGATTCA	TCTGTGTGAA	ATATGAGTTG	GCGAGGAAGA	100
TCGACCTATT	ATTGGCCTAG	ACCAAGGCGC	TATGTACAGC	CTCCTGAAAT	150
GATTGGGCCT	ATGCGGCCCG	AGCAGTTCAG	TGATGAAGTG	GAACCAGCAA	200
CACCTGAAGA	AGGGGAACCA	GCAACTCAAC	GTCAGGATCC	TGCAGCTGCT	250
CAGGAGGGAG	AGGATGAGGG	AGCATCTGCA	GGTCAAGGGC	CGAAGCCTGA	300
AGCTGATAGC	CAGGAACAGG	GTCACCCACA	GACTGGGTGT	GAGTGTGAAG	350
ATGGTCCTGA	TGGGCAGGAG	ATGGACCCGC	CAAATCCAGA	GGAGGTGAAA	400
ACGCCTGAAG	AAGGTGAAAA	GCAATCACAG	TGTTAAAAGA	AGGCACGTTG	450
AAATGATGCA	GGCTGCTCCT	ATGTTGGAAA	TTTGTTCATT	AAAATTCTCC	500
CAATAAAGCT	TTACAGCCTT	CTGCAAAAA	AAAAAAAAA		540

(2) INFORMATION FOR SEQ ID NO: 17:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 532 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 17:

AGCTGTGAGG	CAGTGCTGTG	TGGTTCCTGC	CGTCCGGACT	CTTTTTCCTC	50
TACTGAGATT	CATCTGTGTG	AAATATGAGT	TGGCGAGGAA	GATCGACCTA	100
TTATTGGCCT	AGACCAAGGC	GCTATGTACA	GCCTCCTGAA	GTGATTGGGC	150
CTATGCGGCC	CGAGCAGTTC	AGTGATGAAG	TGGAACCAGC	AACACCTGAA	200
GAAGGGGAAC	CAGCAACTCA	ACGTCAGGAT	CCTGCAGCTG	CTCAGGAGGG	250
AGAGGATGAG	GGAGCATCTG	CAGGTCAAGG	GCCGAAGCCT	GAAGCTGATA	300
GCCAGGAACA	GGGTCACCCA	CAGACTGGGT	GTGAGTGTGA	AGATGGTCCT	350
GATGGGCAGG	AGATGGACCC	GCCAAATCCA	GAGGAGGTGA	AAACGCCTGA	400
AGAAGGTGAA	AAGCAATCAC	AGTGTTAAAA	GAAGGCACGT	TGAAATGATG	450
CAGGCTGCTC	CTATGTTGGA	AATTTGTTCA	TTAAAATTCT	CCCAATAAAG	500
CTTTACAGCC	TTCTGCAAAG	ААААААААА	AA		532

(2) INFORMATION FOR SEQ ID NO: 18:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 539 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 18:

GCCAGGGAGC	TGTGAGGCAG	TGCTGTGTGG	TTCCTGCCGT	CCGGACTCTT	50
TTTCCTCTAC	TGAGATTCAT	CTGTGTGAAA	TATGAGTTGG	CGAGGAAGAT	100
CGACCTATTA	TTGGCCTAGA	CCAAGGCGCT	ATGTACAGCC	TCCTGAAGTG	150
ATTGGGCCTA	TGCGGCCCGA	GCAGTTCAGT	GATGAAGTGG	AACCAGCAAC	200
ACCTGAAGAA	GGGGAACCAG	CAACTCAACG	TCAGGATCCT	GCAGCTGCTC	250

AGGA	GGGAGA	GGATGAGGGA	GCATCTGCAG	GTCAAGGGCC	GAAGCCTGAA	300
GCTG	ATAGCC	AGGAACAGGG	TCACCCACAG	ACTGGGTGTG	AGTGTGAAGA	350
TGGT	CCTGAT	GGGCAGGAGG	TGGACCCGCC	AAATCCAGAG	GAGGTGAAAA	400
CGCC'	TGAAGA	AGGTGAAAAG	CAATCACAGT	GTTAAAAGAA	GACACGTTGA	450
AATG	ATGCAG	GCTGCTCCTA	TGTTGGAAAT	TTGTTCATTA	AAATTCTCCC	500
AATA	AAGCTT	TACAGCCTTC	TGCAAAAAA	АААААААА		539
(2)	(i)	MATION FOR S SEQUENCE CH (A) LENGTH: 1' (B) TYPE: nucle (C) STRANDED (D) TOPOLOGY	ARACTERISTI 7 base pairs ic acid NESS: single	CS:		
		SEQUENCE DE		EQ ID NO: 19:		
ACTO	CCATGA	.G GTATTTC			. 17	
(2)	(i)	MATION FOR SEQUENCE CH (A) LENGTH: 1 (B) TYPE: nucle (C) STRANDEL (D) TOPOLOGY	IARACTERIST 7 base pairs cic acid ONESS: single Y: linear			
	(xi)	SEQUENCE DE	ESCRIPTION: S.	EQ ID NO: 20:		
TTTC	CACCAC	A TGCGTGT			17	
(2)	INFOR (i) (xi)	MATION FOR SEQUENCE CH (A) LENGTH: 1 (B) TYPE: amin (D) TOPOLOG' SEQUENCE DI	HARACTERIST 4 amino acids to acid Y: linear	ICS:		
۸ ۲				-		
Arg s	oci liil l	yr Tyr Trp Pro A 5	1g Flo Alg Alg	i yi vai Oili		

(2) INFORMATION FOR SEQ ID NO: 22: SEQUENCE CHARACTERISTICS: (i) (A) LENGTH: 9 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear SEQUENCE DESCRIPTION: SEQ ID NO: 22: (xi) Tyr Tyr Trp Pro Arg Pro Arg Arg Tyr 5 INFORMATION FOR SEQ ID NO: 23: (2) (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 9 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear FEATURE: (ix) (D) OTHER INFORMATION: Each Xaa may be any amino acid SEQUENCE DESCRIPTION: SEQ ID NO: 23: (xi) Xaa Xaa Trp Pro Xaa Xaa Xaa Xaa Tyr

5

- (2) INFORMATION FOR SEQ ID NO: 24:
 - SEQUENCE CHARACTERISTICS: (i)
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid
 - (D) TOPOLOGY: linear
 - (ix) FEATURE:
 - Each Xaa may be any amino acid (D) OTHER INFORMATION:
 - SEQUENCE DESCRIPTION: SEQ ID NO: 24: (xi)

Xaa Xaa Trp Xaa Arg Xaa Xaa Xaa Tyr

(2)	INFO	RMATION FOR SEQ ID NO: 25: SEQUENCE CHARACTERISTICS:
		(A) LENGTH: 9 amino acids
		(B) TYPE: amino acid
		(D) TOPOLOGY: linear
	(ix)	FEATURE:
	(xi)	(D) OTHER INFORMATION: Each Xaa may be any amino acid SEQUENCE DESCRIPTION: SEQ ID NO: 25:
Xaa X	aa Trp	Xaa Xaa Xaa Arg Tyr
1		5
(2)	INFO	RMATION FOR SEQ ID NO: 26:
()	(i)	SEQUENCE CHARACTERISTICS:
		(A) LENGTH: 138 amino acids
		(B) TYPE: protein
		(C) STRANDEDNESS: single
		(D) TOPOLOGY: linear
	(xi)	SEQUENCE DESCRIPTION: SEQ ID NO: 26:
Met S	er Tro	Arg Gly Arg Ser Thr Tyr Arg Pro Arg Pro Arg Arg Tyr
1	r	5 10 15
Val G	lu Pro I	Pro Glu Met Ile Gly Pro Met Arg Pro Glu Gln Phe Ser
		20 25 30
Asp C	ilu Val	Glu Pro Ala Thr Pro Glu Glu Gly Glu Pro Ala Thr Gln
	35	40 45
		Pro Ala Ala Ala Gln Glu Gly Glu Asp Glu Gly Ala Ser
	0	55 60
Ala G	ly Gln	Gly Pro Lys Pro Glu Ala Asp Ser Gln Glu Gln Gly His
65	1 601	70 75 80
Pro G	in Thr (Gly Cys Glu Cys Glu Asp Gly Pro Asp Gly Gln Glu Met 85 90 95
Asp P		Asn Pro Glu Glu Val Lys Thr Pro Glu Glu Glu Met Arg
a		100 105 110
Ser H	-	Val Ala Gln Thr Gly Ile Leu Trp Leu Leu Met Asn Asn
C, n	115	120 125
_		Asn Leu Ser Pro Arg Lys Pro 135
1.2	30	133

(2)	INFO	RMATION FO	R SEO ID N	IO: 27:		
()	(i)	SEQUENCE	-			
	(-)	(A) LENGTH				
		(B) TYPE: pr		- WILLS		
		(C) STRANE		inale		
		(D) TOPOLO		mgio		
	(xi)	SEQUENCE		IOM: SEO II	∩ N(∩· 27·	
	(AI)	BEQUENCE	DESCRII I.	IOIA. BEQ II	J 140. 21.	
Met Se	er Tro A	Arg Gly Arg Se	er The Tyr A	rg Pro Arg P	ro Arg Arg	Tvr
1	or rip i	5	1		15	- , .
_	lu Pro F	Pro Glu Met Ile	-	•		Ser
V (L1 ()		20	25	11 II S 1 1 0 0	30	,01
Asn G		.o Glu Pro Ala Th		lu Gly Glu F		Gln
Asp C	35	Olu 110 Mia 11	40		45	JIII
Ara G		Pro Ala Ala A			· -	Ser
Aig C 5(_	1 10 Ala Ala A. 5		60 60	Olu Oly Ala	BOI
					lu Cla Cly I	Tie.
65	ly Gill (Gly Pro Lys Pr 70	o Giu Aia fi	75	iu Gili Giy i	80
	In The I		ua Clu Aan C		Cly Cln Ch	
Pro G	штш	Gly Cys Glu Cy 85		ny rio Asp 90	Giy Gili Git 95	i inter
A am D	D					T 770
Asp P		Asn Pro Glu G		III PIO GIU (110	Lys
C1 C		100	105		110	
Gin So	er Gln (Cys				
	115					
(2)	INFO	RMATION FO	OR SEO ID I	VO: 28:		
(2)	(i)	SEQUENCE	•			
	(1)	(A) LENGT				
		(B) TYPE: p		io delas		
		(C) STRANI		single		
		(D) TOPOLO		siligic		
	(xi)	SEQUENCE		TON: SEO I	D NO. 28.	
	(XI)	SEQUENCE	DESCRII I	TOM, SEQ	D NO. 20.	
Met A	an Len	Ser Arg Gly I	vs Ser Thr T	Fyr Tyr Tro	Pro Arg Pro	Arg
1	ISH Dec	5	-	191 191 119 . 10	15	5
_	hr Vol	Gln Pro Pro G				Fln
Aigi	yı var	20	25	y 110 1410t 21	30	JIII
Dho S	or A on	Glu Val Glu P		ro Glu Glu (Δ12
Luc 9	35	Giu vai Giu i	40	io Oia Oia (45	1 11a
Thr G		Gln Asp Pro A		In Glu Glv		ı Glv
	_	Olli Asp 110 F	55	60		4 G15
	50 or Alo	Cly Cla Cly D				Gln
	cr Aia	Gly Gln Gly Pi	o ras ero d	75		80 80
65	T' T	70	C1s. C (Dro Am Cl.	
Gly F	11s Pro	Gln Thr Gly C	ys Giu Cys (
		85		90	95)

Glu Met Asp Pro Pro Asn Pro Glu Glu Val Lys Thr Pro Glu Glu Gly
100 105 110
Glu Lys Gln Ser Gln Cys
115

- (2) INFORMATION FOR SEQ ID NO: 29:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 117 amino acids
 - (B) TYPE: protein
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 29:

Met Ser Trp Arg Gly Arg Ser Thr Tyr Trp Pro Arg Pro Arg Arg
1 5 10 15

Tyr Val Gln Pro Pro Glu Met Ile Gly Pro Met Arg Pro Glu Gln Phe
20 25 30

Ser Asp Glu Val Glu Pro Ala Thr Pro Glu Glu Gly Glu Pro Ala Thr
35 40 45

Gln Arg Gln Asp Pro Ala Ala Gln Glu Gly Glu Asp Glu Gly Ala 50 55 60

Ser Ala Gly Gln Gly Pro Lys Pro Glu Ala Asp Ser Gln Glu Gln Gly 65 70 75 80

His Pro Gln Thr Gly Cys Glu Cys Glu Asp Gly Pro Asp Gly Gln Glu 85 90 95

Met Asp Pro Pro Asn Pro Glu Glu Val Lys Thr Pro Glu Glu Glu Glu Glu I00 105 110

Lys Gln Ser Gln Cys

115

- (2) INFORMATION FOR SEQ ID NO: 30:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 117 amino acids
 - (B) TYPE: protein
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 30:

Met Ser Trp Arg Gly Arg Ser Thr Tyr Tyr Trp Pro Arg Pro Arg Arg
1 5 10 15

Tyr Val Gln Pro Pro Glu Val Ile Gly Pro Met Arg Pro Glu Gln Phe 20 25 30

Ser Asp Glu Val Glu Pro Ala Thr Pro Glu Glu Glu Glu Pro Ala Thr 35 40 45 Gln Arg Gln Asp Pro Ala Ala Ala Gln Glu Gly Glu Asp Glu Gly Ala
50
55
60
Ser Ala Gly Gln Gly Pro Lys Pro Glu Ala Asp Ser Gln Glu Gln Gly
65
70
75
80
His Pro Gln Thr Gly Cys Glu Cys Glu Asp Gly Pro Asp Gly Gln Glu
85
90
95
Met Asp Pro Pro Asn Pro Glu Glu Val Lys Thr Pro Glu Glu Gly Glu
100
105
110
Lys Gln Ser Gln Cys
115

- (2) INFORMATION FOR SEQ ID NO: 31:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 117 amino acids
 - (B) TYPE: protein
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 31:

Met Ser Trp Arg Gly Arg Ser Thr Tyr Tyr Trp Pro Arg Pro Arg Arg

1 5 10 15

Tyr Val Gln Pro Pro Glu Val Ile Gly Pro Met Arg Pro Glu Gln Phe
20 25 30

Ser Asp Glu Val Glu Pro Ala Thr Pro Glu Glu Gly Glu Pro Ala Thr
35 40 45

Gln Arg Gln Asp Pro Ala Ala Ala Gln Glu Gly Glu Asp Glu Gly Ala
50 55 60

Ser Ala Gly Gln Gly Pro Lys Pro Glu Ala Asp Ser Gln Glu Gln Gly
65 70 75 80

His Pro Gln Thr Gly Cys Glu Cys Glu Asp Gly Pro Asp Gly Gln Glu
85 90 95

Val Asp Pro Pro Asn Pro Glu Glu Val Lys Thr Pro Glu Glu Gly Glu
100 105 110

Lys Gln Ser Gln Cys

115